

CLAIMS

What is claimed is:

- 1 1. A method comprising the steps of:
2 providing a liquid rubber that has multiple sites of unsaturation;
3 chemically modifying the liquid rubber's sites of unsaturation to yield alternate
4 functionalities and thereby create a functionalized liquid rubber; and
5 terminating a metallic or organometallic-initiated living polymer with the
6 functionalized liquid rubber.
- 1 2. The method of claim 1, wherein said liquid rubber has been synthesized with at least one
2 conjugated diene monomer.
- 1 3. The method of claim 1, wherein said liquid rubber is polybutadiene.
- 1 4. The method of claim 1, wherein said metallic or organometallic-initiated living polymer
2 is a polymeric organo-lithium.
- 1 5. The method of claim 1, wherein said metallic or organometallic-initiated living polymer
2 is poly(styryl)lithium or poly(butadienyl)lithium.
- 1 6. The product produced by the process of claim 1.
- 1 7. The method of claim 1 wherein said alternate functionalities are selected from the group
2 consisting of epoxide, maleic anhydride, and alkoxysilane functional groups.
- 1 8. The method of claim 1 further comprising the step of performing hydrolysis on the
2 alternate functionalities to yield hydroxy or carboxy functional groups.
- 1 9. The method of claim 1, wherein said liquid rubbers are linear or branched.

- 1 10. A synthetic polymer with at least one highly-functionalized liquid-rubber chain-end
2 moiety.
- 1 11. The synthetic polymer of claim 10, wherein said synthetic polymer is a polydiene.
- 1 12. The synthetic polymer of claim 10, wherein said synthetic polymer is selected from the
2 group consisting of polystyrene, polybutadiene, and polyisoprene.
- 1 13. The synthetic polymer of claim 10, wherein said liquid rubber is polybutadiene.
- 1 14. The synthetic polymer of claim 10, wherein said highly-functionalized liquid- rubber
2 chain-end moiety comprises functional groups selected from the group consisting of:
3 maleic anhydride groups, epoxide groups, hydrolyzed maleic anhydride groups, and
4 hydrolyzed epoxide groups.
- 1 15. A star polymer comprising a highly-functionalized liquid-rubber core and at least one
2 polymeric arm prepared by anionic polymerization.
- 1 16. The star polymer of claim 15, wherein said polymeric arm is polystyrene, polyisoprene,
2 or polybutadiene.
- 1 17. The star polymer of claim 15, wherein said core is polybutadiene.